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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,922	07/07/2003	Sung-Kwon Lee	P68964US0	6949
43569	7590	04/01/2005	EXAMINER	
MAYER, BROWN, ROWE & MAW LLP 1909 K STREET, N.W. WASHINGTON, DC 20006			HUYNH, ANDY	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EX

Office Action Summary	Application No.	Applicant(s)	
	10/612,922	LEE, SUNG-KWON	
	Examiner	Art Unit	
	Andy Huynh	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2003.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 7-11 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 07 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>07/07/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

In the Response to Restriction Requirement dated 02/17/05, Applicant's election with traverse of claims 7-11 drawn to a method is acknowledged. Accordingly, claims 1-6 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 35 § 1.142(b) and MPEP § 821.03. Applicant has the right to file a divisional application covering the subject matter of the non-elected claims 1-6, drawn to a device.

The traversal is on the ground(s) that the reason is speculative. That is not found persuasive because

(a) The above two different classifications show the need for two entirely different fields of a search.

(b) The inventions are in different statutory classes which have different case law basis for examination.

(c) Non-restriction would mean that if one of the inventions were held to be unpatentable then the other would also be inherently held to be unpatentable. Therefore, restriction is proper since there are apparently two different inventive concepts in making the device and in the device itself.

The requirement is still deemed proper and is therefore made **FINAL**.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) based on an application filed in REPUBLIC OF KOREA, 2002-84154 on 12/26/2002.

Information Disclosure Statement

This office acknowledges receipt of the following items from the applicant: Information Disclosure Statement (IDS) filed on 07/07/2003. The references cited on the PTOL 1449 form have been considered.

Claim Objections

Claims **10 and 11** are objected to because of the following reasons.

It is believed that claims **10 and 11** should be dependent from claim **7** instead of claim **6**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **7-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Figs. 1-3 Prior Art of the specification in view of Rostoker et al. (USP 6,181,011 hereinafter referred to as "Rostoker").

Regarding claims **7 and 9**, Figs. 1-3 Prior Art and the corresponding texts as set forth in the Description of Related Arts of the specification disclose a method for fabricating

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semiconductor memory device including a cell region 101 and a peripheral circuit region 102, the method comprises the steps of:

forming a plurality of line patterns 103A, 103B in the cell region and the peripheral circuit region, each being formed by stacking a conductive layer 10 and an insulating hard mask 11;

removing the insulating hard mask formed in the peripheral circuit region;

forming a conductive spacer 12 at sidewalls each line pattern the peripheral circuit region, wherein a spacing distance D between line patterns is equal to a width W of the line pattern;

forming an insulation layer 14 on an entire surface the resulting structure;

forming a photoresist pattern 16 for forming a contact hole exposing the conductive layer on the insulation layer; and

forming a deep contact hole 19 exposing conductive layer by etching insulation layer with use of the photoresist pattern as an etch mask.

Figs. 1-3 Prior Art fail to teach a spacing distance D between line patterns is at least onefold greater than a width W of the line pattern. Rostoker teaches in Fig. 4 that an integrated circuit comprises a spacing distance S between line patterns/conductive lines 412, 414 is at least onefold greater than a width W of the line pattern/conductive lines (col. 9, line 15-col. 10, line 42). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the teaching of an integrated circuit comprising a spacing distance between conductive lines is at least onefold greater than a width W of the conductive lines, as taught by Rostoker to incorporate into Figs. 1-3 Prior Art to arrive the claimed limitation in order to shrink

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feature size on an integrated circuit (IC) chip, and facilitate the manufacture of IC chips having smaller features, a given semiconductor device can be made smaller, hence facilitating increased speed and performance (col. 6, lines 28-45).

Regarding claims **8 and 10**, Figs. 1-3 Prior Art disclose the claimed invention except for the line pattern in the peripheral circuit region has a ratio of a width to a spacing distance in a range of about 1:1.05 to about 1:1.30, and a ratio of the width of the line pattern in the cell region to that of the line pattern in the peripheral circuit region is in a range of about 1:1 to about 1:1.3. Rostoker teaches that an integrated circuit has features such as conductive lines having a ratio of width:spacing (W:S) is less than or equal to 0.7:1.00. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to form the line pattern in the peripheral circuit region has a ratio of a width to a spacing distance in a range of about 1:1.05 to about 1:1.30, and a ratio of the width of the line pattern in the cell region to that of the line pattern in the peripheral circuit region is in a range of about 1:1 to about 1:1.3, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim **11**, Figs. 1-3 Prior Art and Rostoker disclose the claimed invention except for the conductive spacer made any material selected from group consisting of TiN, TaN, W or WN. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the conductive spacer made any material selected from group consisting of TiN, TaN, W or WN, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Conclusion

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy Huynh, (571) 272-1781. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The Fax number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the -status of this application or proceeding should be directed to the receptionist whose phone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andy Huynh

Patent Examiner

Ah

03/25/05